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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,150	07/30/2001	Pascal H. Huat	062891.0612	2976

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Barton E. Showalter
Baker Botts L.L.P.
Suite 600
2001 Ross Avenue
Dallas, TX 75201-2980

EXAMINER

LERNER, MARTIN

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 12/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/918,150

Applicant(s)

HUART ET AL.

Examiner

Martin Lerner

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 41 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 to 41 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 30 July 2001.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 to 4, 6, 7, 9, 11 to 13, 15, 16, 18, 21 to 23, 25, 26, 28 to 32, 34, 35, 37, and 39 to 41 are rejected under 35 U.S.C. 102(b) as being anticipated by *Shepard*.

Regarding independent claims 1, 39, and 40, *Shepard* discloses an apparatus and method for error concealment, comprising:

“receiving a plurality of first voice samples communicated from a source” – an analog audio signal 101 is received at a microphone, and then converted into a digital signal; the resulting digital signal 102 given by an audio stream is grouped into a number of data packets (“first samples”) (column 3, lines 5 to 17: Figure 1c); audio data is speech (“voice samples”) from AM/FM radio transmissions or teleconferences at meetings (column 1, lines 9 to 24; column 1, lines 58 to 67);

“receiving a voice parameter communicated from the source, the voice parameter characterizing the first voice samples” – a fundamental pitch period (“a voice parameter”) of a packet is determined, encoded as a preamble to a data packet, and transmitted (column 3, line 62 to column 4, line 9: Figure 2: Steps 203 and 204); a

Art Unit: 2654

packet with a fundamental pitch period in a preamble is received (column 4, lines 12 to 13: Figure 3);

“determining a loss of a packet communicated from the source” – when a packet is received, a determination is made as to whether that packet has lost or dropped any portion of its data (column 4, lines 12 to 16: Figure 3: Step 301);

“generating a plurality of second voice samples using the first voice samples and the voice parameter” – if it is determined that an error has occurred, the fundamental pitch period is retrieved from the preamble of the previous data packet; a corresponding amount of substitute data is synthesized by replicating the fundamental pitch period of the previous packet to fill in the data that was dropped or lost during transmission (column 4, lines 25 to 52: Figure 3: Steps 302 to 306).

Regarding independent claim 11, *Shepard* discloses an apparatus and method for error concealment, further comprising receiving a plurality of packets “for each of the sources” as a plurality of AM/FM radio transmissions or a plurality of participants in a teleconferencing meeting (column 1, lines 9 to 24; column 1, lines 58 to 67).

Regarding independent claims 21 and 30, *Shepard* discloses an apparatus and method for error concealment, further comprising transceiver 508 (“an interface operable to receive”), a checksum operation 509, a UDP/TCP processor 511, and replicate and cross-fade 510 (“a processor operable to determine . . . and to generate”) (column 5, lines 15 to 29: Figure 5);

“a converter operable to convert the first and second voice samples into a speech signal” – a digital-to-analog converter 512 converts the digital data into an analog signal (column 5, lines 25 to 26: Figure 5);

“a speaker operable to communicate the speech signal to a user” – an analog signal is played back through speaker 514 (column 5, lines 27 to 28: Figure 5).

Regarding claims 2 and 29, *Shepard* discloses:

“converting the first and second voice samples into a speech signal” – a digital-to-analog converter 512 converts the digital data into an analog signal (column 5, lines 25 to 26: Figure 5);

“presenting the speech signal to a user” – an analog signal is played back through speaker 514 (column 5, lines 27 to 28: Figure 5).

Regarding claims 3, 4, 12, 13, 22, 23, 31, and 32, *Shepard* discloses a fundamental pitch period of a packet is determined, encoded as a preamble to a data packet, and transmitted (column 3, line 62 to column 4, line 9: Figure 2: Steps 203 and 204); in the preferred embodiment, an autocorrelation function is applied to a data packet, where a first “peak” of the autocorrelation result usually signifies the fundamental pitch period (column 4, lines 5 to 8).

Regarding claims 6, 7, 15, 16, 25, 26, 34, and 35, *Shepard* discloses a fundamental pitch period (“the first voice parameter”) of a packet is determined, encoded as a preamble to a data packet, and transmitted (column 3, line 62 to column 4, line 9: Figure 2: Steps 203 and 204); an exemplary packet might contain 1,500

Art Unit: 2654

samples (column 4, lines 32 to 33); thus, a pitch period is placed in the same packet as voice samples (“in a single packet generated at the source”); however, at the same time, a fundamental pitch from a previous packet is obtained to replicate data that is dropped (column 4, lines 28 to 32); thus, a fundamental pitch (“the voice parameter”) is received in a previous packet (“a first packet”) and samples (“the first voice samples”) are received in a later packet (“a second packet separate from the first packet”).

Regarding claims 9, 18, 28, 37, and 41, *Shepard* discloses:

“determining a silence interval represented by the packet loss” – an amount of data that is in error or that was dropped is determined (column 4, lines 27 to 29: Figure 3: Step 303); if data is dropped, a determined amount of data is “a silence interval”;

“determining a start point in a buffer storing the first voice samples that is one or more integer pitch periods before the beginning of the silence interval” – the fundamental pitch period is replicated the requisite number of times in order to “fill in” the data that was dropped or lost during transmission, where “n” is the number of times (“one or more integer pitch periods”) required for replication (column 4, lines 32 to 44: Figure 3: Step 304); boundaries of sinusoidal cycle 401 for existing data represent “a start point” for replicating data by averaging with a previous boundary (column 4, lines 53 to 65: Figure 4); implicitly, received samples are stored in a buffer during processing;

“copying first voice samples from the buffer beginning at the start point to generate the second voice samples associated with the silence interval” – a fundamental pitch period is replicated a requisite number of times in order to “fill in” the

data that was dropped or lost during transmission (column 4, lines 32 to 35: Figure 3);
implicitly, replication involves copying samples from a buffer.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 10, 14, 19, 20, 24, 33, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shepard* in view of *Kung et al.*

Concerning claims 5, 14, 24, and 33, *Shepard* discloses an apparatus and method for error concealment of an audio stream in a transfer and interface of digital data as part of an IP protocol, a User Datagram Protocol (UDP), and a Transmission Control Protocol (TCP), but does not expressly disclose at least one of a G.711 audio format or a linear audio format. However, *Kung et al.* teaches packetized data for voice over IP telephony (VoIP) (column 5, lines 53 to 65), where an appropriate encoding format of G.711 is employed for a file transfer protocol (column 8, lines 32 to 44). Generally, G.711 is a well known encoding standard for voice. *Kung et al.* provides for communication between users in diverse communications systems for providing broadband including an Internet Protocol Telephony Network. (Column 1, Lines 8 to 12) It would have been obvious to one having ordinary skill in the art to provide a G.711 audio format as taught by *Kung et al.* in an apparatus and method for error concealment

Art Unit: 2654

of an audio stream of *Shepard* for the purpose of accommodating Voice over Internet Protocol (VoIP) between diverse communication systems.

Concerning claims 10 and 20, *Kung et al.* teaches negotiating and reserving bandwidth for a multimedia call (column 15, lines 1 to 35).

Concerning claims 19 and 38, *Kung et al.* teaches a conference server for multiplexing and demultiplexing information packets ("mixing first and second voice samples from more than one of the sources to generate a mixed signal") during conference calls from a plurality of users (column 11, lines 7 to 33).

5. Claims 8, 17, 27, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shepard* in view of *Liao et al.* ("*Adaptive recovery techniques for real-time audio streams*").

Shepard discloses a cross-fade for rendering smoother the transition between boundaries of data by averaging values of sample points (column 4, lines 53 to 65: Figure 4), but does not provide an attenuation factor that increases with each subsequent packet loss. However, *Liao et al.* teaches a packet-loss recovery technique for audio streams involving pitch waveform replication, where pitch segments are adjusted. (Pages 817 to 818) Specifically, an amplitude adjustment of a reconstructed packet is provided from a start point $x[start]$ to an end point $x[end]$ in the reconstructed packet by forward amplitude adjustment (FWAA) and backward amplitude adjustment (BWAA), whereby an amplitude factor $(AF - AP)/(AP * n)$ decreases in a forward direction and an amplitude factor $(AP - AF)/(AF * n)$ decreases in a backward direction.

Art Unit: 2654

A decreasing amplitude adjustment is equivalent to an increasing attenuation factor because $factor * i$ increases as i increases. (Pages 819 to 820: Figure 5) The objective is to adjust amplitude to ensure continuity inside the packet as well as to neighboring packets. (Page 819) It would have been obvious to one having ordinary skill in the art to provide an attenuation factor increasing with each subsequent packet as taught by *Liao et al.* in an apparatus and method for error concealment of an audio stream of *Shepard* for the purpose of providing continuity inside and between packets.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Nahumi, Chen et al., Vargo et al., Westerlund et al., Bruhn, Bialik, Callens et al., Kroon, Shoham, and Goodman et al. disclose related art.

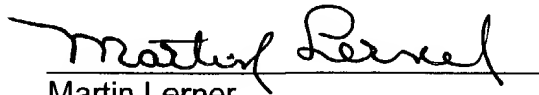
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2654

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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12/14/04


Martin Lerner
Examiner
Group Art Unit 2654